Root Cause Failure Analysis – RCFA 1078 – R17 Suspensin Failure Batch #554 (5354)

PURPOSE:	Determine why suspension was lost for batch 554 of 5354 on reactor 17
DATE OF RCFA:	12/13/12
PROBLEM DEFINITION -	
WHAT:	Lost suspension
WHEN:	11/19/12
WHERE:	Bldg 4 reactor 17
CLASSIFICATION:	
Safety:	None
Environmental:	TBD
Revenue Loss:	0
Out of pocket cost:	161K
Frequency:	

Description: On November 19th at 3:12 pm (2:22 since trip) there was a profile alarm on R17. This was 7 minutes after the 2nd sample, for which bead size was estimated at 900 microns. Operator pulled a sample and the bead size was estimated at 1000 micron. Operator did not suspect any issues with the sample. 10 minutes later, at 3:22 pm (2:32) a 2nd profile alarm was received and again operators pulled a sample. This time a partial loss of suspension was seen. The batch was killed with 50 lbs of TCP. According to historical data, the batch temperature started trending upwards at 3:23 (operators would not have been able to detect this trend yet). At 3:27 (2:37) a 5th sample was pulled, there was complete suspension loss. Doug Thurman arrived in the control room around 3:30pm.

At 3:34 (2:44) the reactor reached 200 degF and the reactor was put into emergency cooling. The first shot of PVA was added at 3:35 pm (2:45) and a second shot was added at 3:40 pm (2:50). Chad Holman arrived in the control room around 3:45 pm. At 3:53 pm (3:03) reactor temperature reached 205 degF. The assembly alarm was sounded at 3:55. 1000 lbs of water was also added at 3:55 pm(3:05). AT 4:04 (3:14) there was an agitator high current alarm, the agitator current peaked at 278 amps at 4:06. Also at 4:04 pm the flare was shut down and hot drop was enabled, reactor temp was at 208 degF. The operators then started dumping reactor contents to the pit. At 4:07 the agitator RPMs were reduced to 45, 30, 20 and then to 12 RPMS by 4:08. The agitator amps dropped down to around 40 amps until 4:13 pm when they started to go back up. AT 4:21 pm the agitator was manually stopped after reaches 258 amps. Approximately 2/3rd of the batch was dumped to the pit.

Immediate Corrective Action: The only raw material change for this batch was on the catalyst. The new catalyst was also already charged in a few other batches. The catalyst was temporarily pulled until the other batches using it were complete without any issues seen.

ROOT CAUSE:

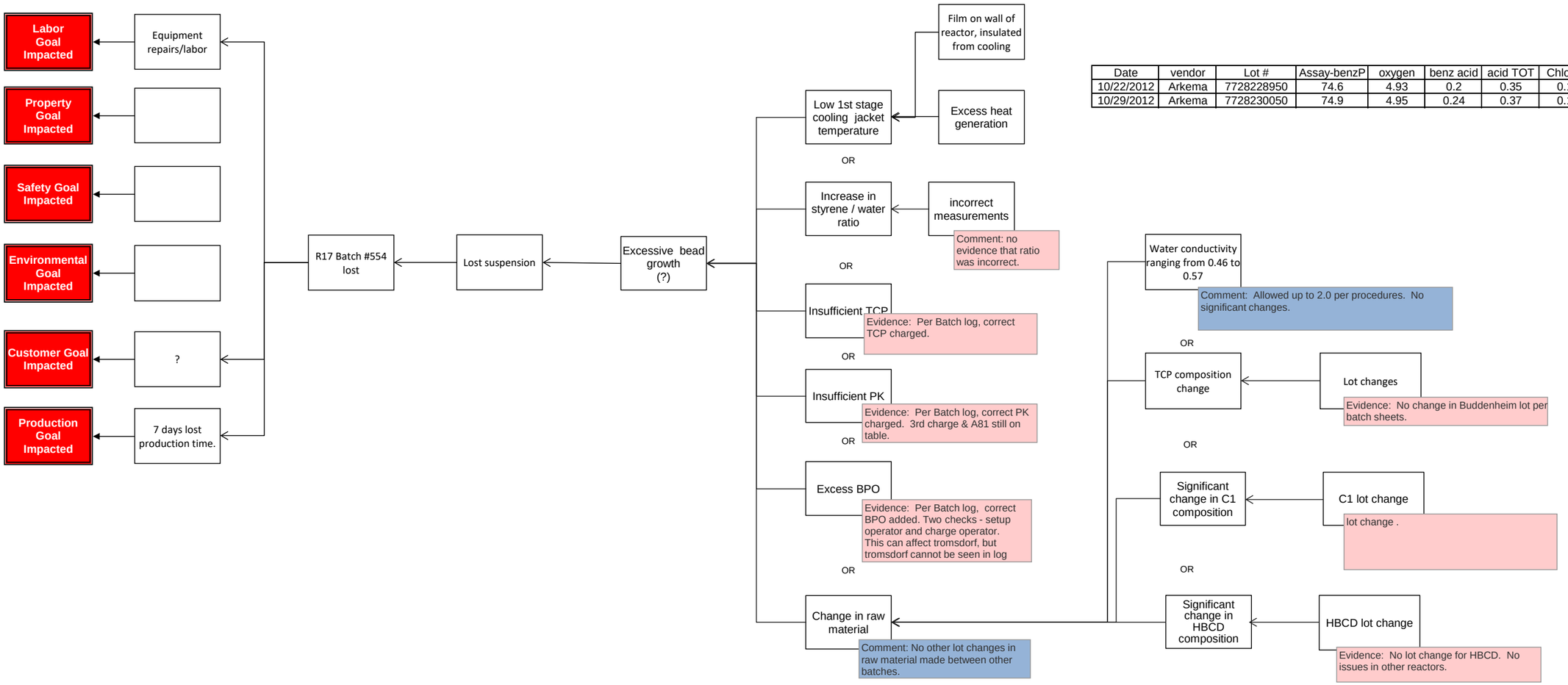
- Unknown

	CORRECTIVE ACTIONS	RESPONSIBLE PERSON	DUE	DONE
1)	Consider modifying batch sheets or creating a form for operators to document additional actions taken (extra samples, etc) when there are batch issues.	Chad Holman	**3/31/13**	
2)				
3)				

ATTENDEES

FACILITATOR:	Chad Holman	Process Engineer
ATTENDEES:	Roy Leckonby	TD Team Leader
	Doug Thurman	Production Facilitator

Step 2. Cause Map



Date	vendor	Lot #	Assay-benzP	oxygen	benz acid	acid TOT	Chloride	surfactant
10/22/2012	Arkema	7728228950	74.6	4.93	0.2	0.35	0.18	*
10/29/2012	Arkema	7728230050	74.9	4.95	0.24	0.37	0.18	*